

## ABSTRACT

A method and apparatus for transmitting electromagnetic flux through well casing or similar materials to measure or detect the electrical resistivity of media in the surrounding geologic formation. The invention creates a magnetically transparent region in an electromagnetic barrier material, e.g., ferromagnetic metal well casing. It further incorporates a transmitter sending an electromagnetic wave at a selected frequency and strength, and a receiver to measure returning signals. The method and apparatus may also incorporate the controlled use of electromagnetic barrier material that can be wholly or partially saturated with electromagnetic energy in order that the electromagnetic wave transmitted by the invention can be focused in a controlled manner.